[10191/4495]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	:	Examiner: J. Boeckmann
Franz THOEMMES	:	
For: FUEL INJECTOR	:	
	:	Art Unit: 3752
Filed: May 31, 2006	:	
Serial No.: 10/564,226	:	

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this correspondence is electronically transmitted to the USPTO via the Office of electronic filing system on:
Date: June 15, 2010
Signature: /Kevin Kambo/
Kevin Kambo

APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37

SIR:

On April 16, 2010, Appellant submitted a Notice of Appeal from the last decision of the Examiner contained in the Final Office Action dated December 23, 2009 in the above-identified patent application.

In accordance with 37 C.F.R. § 41.37, this brief is submitted in support of the appeal of the rejections of claims 8, 10, and 14 to 22. For at least the reasons set forth below, the final rejections of claims 8, 10, and 14 to 22 should be reversed.

1. REAL PARTY IN INTEREST

The real party in interest in the present appeal is ROBERT BOSCH GMBH of Stuttgart in the Federal Republic of Germany, which is the assignee of the entire right, title and interest in and to the present application.

2. RELATED APPEALS AND INTERFERENCES

There are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellant or the assignee, ROBERT BOSCH GMBH, "which may be related to, directly

affect or be directly affected by or have a bearing on the Board's decision in the pending appeal."

3. STATUS OF CLAIMS

Claims 1 to 7, 9, and 11 to 13 have been canceled.

Claims 8, 10, and 14 to 22 are pending.

Claims 8, 10, and 14 to 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,382,532 ("French et al.") and U.S. Patent Application Publication No. 2002/0185555 ("Kobayashi et al.").

A copy of the appealed claims, *i.e.*, claims 8, 10, and 14 to 22, is attached hereto in the Claims Appendix.

4. STATUS OF AMENDMENTS

In response to the Final Office Action dated December 23, 2009, Appellant submitted a "Reply Under 37 C.F.R. § 1.116" on March 11, 2010. The Reply Under 37 C.F.R. § 1.116 did not include any proposed amendments to the claims. It is noted, however, that the Advisory Action dated March 23, 2010 indicates that "[f]or purposes of appeal, the proposed amendment(s) . . . will not be entered," despite the fact that no proposed amendments to the claims were included in the Reply Under 37 C.F.R. § 1.116. It is Appellant's understanding that the claims as included in the annexed "Claims Appendix" reflect the current claims.

5. SUMMARY OF CLAIMED SUBJECT MATTER

The claims on appeal include two independent claims, *i.e.*, claims 8 and 15.

Independent claim 8 relates to a fuel injector 1. *Specification* at page 2, lines 14 to 17. Claim 8 recites that the fuel injector 1 includes a valve needle 8. *Specification* at page 2, lines 28 to 29. Claim 8 recites that the fuel injector 1 includes an armature 7 forming an axially movable valve part together with the valve needle 8. *Specification* at page 2, lines 28 to 29 and page 3, lines 21 to 28. Claim 8 recites that the fuel injector 1 includes a restoring spring 14 acting upon the armature 7. *Specification* at page 3, lines 4 to 6. Claim 8 recites that the fuel injector 1 includes a magnetic coil 2 cooperating with the armature 7. *Specification* at page 3, lines 21 to 28. Claim 8 recites that the fuel injector 1 includes a valve-seat body 11. *Specification* at page 2, lines 32 to 34. Claim 8 recites that the fuel injector 1 includes a valve-closure member 10, which forms a sealing seat with the valve-seat

body 11, being provided on the valve needle 8. *Specification* at page 2, lines 32 to 34 and page 3, lines 4 to 6. Claim 8 recites that the fuel injector 1 includes a valve sleeve 5 surrounding the armature 7 and the valve needle 8 along the entire length of the armature 7 and the entire length of the valve needle 8, a wall thickness of the valve sleeve 5 varying across its axial extension. *Specification* at page 2, lines 22 to 23 and page 4, lines 8 to 13 and 24 to 26. Claim 8 recites that the wall thickness of the valve sleeve 5 decreases in a discharge direction of the fuel in order to limit noise emissions. *Specification* at page 4, lines 8 to 9. Claim 8 recites that an outer diameter and a radial cross section of the valve sleeve 5 decrease between an inflow-side region and a discharge-side region on a collar 27 which also separates the inflow-side region having greater material strength from the discharge-side region having lower material strength. *Specification* at page 4, lines 15 to 18. Claim 8 recites that the radial cross section and the wall thickness of the inflow-side region are constant from the collar 27 to a location axially beyond the valve needle 8 in a direction opposite the discharge direction of the fuel. *Specification* at page 4, lines 8 to 13 and 20 to 22. Claim 8 recites that the decreased radial cross section and the decreased wall thickness of the discharge-side region are constant from the collar 27 to a discharge-side end of the valve sleeve 5, the discharge-side end of the valve sleeve 5 disposed axially beyond the valve-closure member 10. *Specification* at page 4, lines 8 to 13 and 20 to 22. Claim 8 recites that the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle 8 in both the discharge direction of the fuel and the direction opposite the discharge direction of the fuel. *Specification* at page 4, lines 8 to 13 and 20 to 22.

Independent claim 15 relates to a fuel injector 1. *Specification* at page 2, lines 14 to 17. Claim 15 recites that the fuel injector 1 includes a valve needle 8. *Specification* at page 2, lines 28 to 29. Claim 15 recites that the fuel injector 1 includes an armature 7, the armature 7 and the valve needle 8 together forming an axially movable valve part. *Specification* at page 2, lines 28 to 29 and page 3, lines 21 to 28. Claim 15 recites that the fuel injector 1 includes a restoring spring 14 acting upon the armature 7. *Specification* at page 3, lines 4 to 6. Claim 15 recites that the fuel injector 1 includes a magnetic coil 2 cooperating with the armature 7. *Specification* at page 3, lines 21 to 28. Claim 15 recites that the fuel injector 1 includes a valve-seat body 11. *Specification* at page 2, lines 32 to 34. Claim 15 recites that the fuel injector 1 includes a valve-closure member 10 disposed on the valve needle 8, the valve-closure member 10 forming a sealing seat with the valve-seat body 11. *Specification* at page 2, lines 32 to 34 and page 3, lines 4 to 6. Claim 15 recites that the

fuel injector 1 includes a valve sleeve 5 surrounding the armature 7 and the valve needle 8 along the entire length of the armature 7 and the entire length of the valve needle 8. *Specification* at page 2, lines 22 to 23, page 4, lines 8 to 13. Claim 15 recites that an outer diameter, a wall thickness and a radial cross section of the valve sleeve 5 decrease between an inflow-side region and a discharge-side region on a collar 27, the collar 27 separating the inflow-side region from the discharge-side region. *Specification* at page 4, lines 15 to 18. Claim 15 recites that an intake pipe 24 is inserted into the valve sleeve 5 in the inflow-side region, the intake pipe 24 extending axially beyond the valve sleeve 5 in an intake-side direction to span an axial distance between the valve sleeve 5 and a seal 19 disposed in a region of central fuel supply 18. *Specification* at page 3, lines 9 to 14 and page 4, lines 8 to 11. Claim 15 recites that the radial cross section and the wall thickness of the inflow-side region are constant from the collar 27 to a location axially beyond the valve needle 8 in the intake-side direction. *Specification* at page 4, lines 8 to 13 and 20 to 22. Claim 15 recites that the decreased radial cross section and the decreased wall thickness of the discharge-side region are constant from the collar 27 to a discharge-side end of the valve sleeve 5, the discharge-side end of the valve sleeve 5 disposed axially beyond the valve-closure member 10. *Specification* at page 4, lines 8 to 13 and 20 to 22. Claim 15 recites that the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle 8 in both the intake-side direction and a direction opposite the intake-side direction. *Specification* at page 4, lines 8 to 13 and 20 to 22.

6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 8, 10, and 14 to 22 are patentable under 35 U.S.C. § 103(a) over the combination of French et al. and Kobayashi et al.

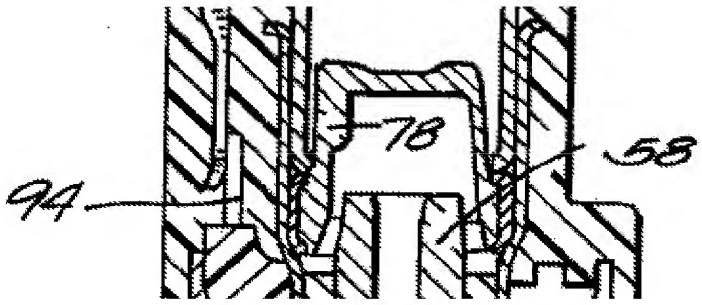
7. ARGUMENT

Claims 8, 10, and 14 to 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of French et al. and Kobayashi et al. It is respectfully submitted that the present rejection should be reversed for at least the following reasons.

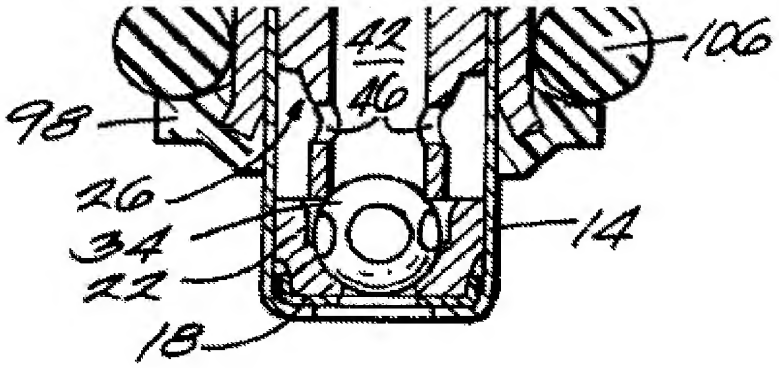
The Final Office Action and the Advisory Action contend that it would have been obvious for one of ordinary skill in the art to modify the metallic jacket 14 of French et al., in view of the alleged teaching of Kobayashi et al., to have a greater wall thickness at an upper portion than at a lower portion.

French et al. discloses that the fuel injector 10 is overmolded with plastic overmolding 98. Thus, it would be readily apparent to one of ordinary skill in the art that the unmodified jacket 14 disclosed by French et al. is fully capable of withstanding any pressures encountered during the overmolding. Thus, there would be ***no apparent reason to increase the thickness of any portion of the jacket 14*** of French et al. As regards the suggestion at page 3 of the Final Office Action of applying a higher pressure during the overmolding, it is entirely unclear why or how one of ordinary skill in the art would increase the pressure during the overmolding process. Such a proposed pressure increase is in no way taught or suggested by the combination of French et al. and Kobayashi et al. It is further noted that, even if the molding process of Kobayashi et al. differs in some way from that of French et al.—which is in no manner apparent from the disclosures Kobayashi et al. and French et al.—there is no indication whatsoever that the molding process of Kobayashi et al. creates a higher pressure than the molding process of French et al.

Moreover, as is plainly illustrated in Figure 1 of French et al., partially reproduced below, the upper portion of the jacket 14 is ***already reinforced*** by the insertion of the extension tube 70 (which is itself fully capable of bearing any loads associated with the overmolding), as well as additional structure, into the upper portion of the jacket 14.



Further, the overmolding 98 is not confined to the upper portion of the jacket 14 of French et al. Rather, as clearly illustrated in Figure 1 of French et al., partially reproduced below, the ***overmolding 98 is also applied to the lower portion of the jacket 14***, notably in a region that—as opposed to the upper portion of the jacket 14—does not have any interior reinforcement.



The assertion in the Advisory Action that the overmolding 98 of French et al. is applied only to the upper portion of the jacket 14 is plainly contradicted by what is actually shown and disclosed by French et al. Indeed, as plainly illustrated in the partial reproduction of Figure 1 above, the overmolding 98 is clearly shown as being applied to the lower portion of the jacket 14 in addition to the upper portion. As such, even if it is assumed, *arguendo*, that there would have been some reason to increase the wall thickness of the jacket 14—which applicants do not concede—there would have been no reason or rationale to increase only the thickness of the upper portion and not the thickness of the lower portion. Rather, since the upper portion of the jacket 14 is reinforced by additional structure (including the inserted extension tube 70) and the lower portion of the jacket 14 includes a non-reinforced region over which the overmolding 98 is formed, making the upper portion of the jacket 14 thicker than the lower portion of the jacket 14 would be counter-intuitive.

Kobayashi et al. does not cure the aforementioned critical deficiencies in the present rejection. In this regard, it is noted that the thicker upper portion 2C of case 2—as opposed to the upper portion of the jacket 14 of French et al.—is in no manner reinforced, interiorly or exteriorly, along the vast majority of its axial extension. Although the Final Office Action and the Advisory Action contend that increased wall thickness of the upper portion 2C of Kobayashi would have motivated one of ordinary skill in the art to increase the wall thickness in the upper portion of the jacket 14 of French et al., the upper portion of the jacket 14 would plainly not be required to bear a mechanical load that is the same or in any way analogous to the load carried by the upper portion 2C of Kobayashi et al. Indeed, as set forth above, the upper portion of the jacket 14 of French et al. is interiorly reinforced by an additional structure, *i.e.*, extension tube 70, which is itself fully capable of bearing any loads present during an overmolding process.

In view of the foregoing, it is plainly apparent that the combination of French et al. and Kobayashi et al. does not disclose, or even suggest, a valve sleeve wherein a

constant decreased radial cross section and a constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle in both the discharge direction of the fuel and the direction opposite the discharge direction of the fuel, as recited in claim 8, or a valve sleeve wherein a constant decreased radial cross section and a constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle in both the intake-side direction and a direction opposite the intake-side direction, as recited in claim 15.

As indicated above, the combination French et al. and Kobayashi et al. does not disclose, or even suggest, all of the features of either of claims 8 and 15. As such, it is plainly apparent that the combination of French et al. and Kobayashi et al. fails to render unpatentable claims 8 and 15, or any of claims 10, 14, and 16 to 22, which ultimately depend from claims 8 and 15. That is, the Final Office Action does not establish a *prima facie* case of obviousness—as it must—consistent with the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 U.S.P.Q.2d 1385 (2007).

In view of all of the foregoing, reversal of the present rejection is respectfully requested.

8. CLAIMS APPENDIX

A "Claims Appendix" is attached hereto and appears on the three (3) pages numbered "Claims Appendix 1" to "Claims Appendix 3."

9. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellant in the appeal. An "Evidence Appendix" is nevertheless attached hereto and appears on the one (1) page titled "Evidence Appendix."

10. RELATED PROCEEDINGS APPENDIX

As indicated above in Section 2, above, "[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, ROBERT BOSCH GMBH, 'which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.'" As such, there are no "decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]" to be submitted.

A "Related Proceedings Appendix" is nevertheless attached hereto and appears on the one (1) page titled "Related Proceedings Appendix."

11. CONCLUSION

For at least the reasons indicated above, Appellant respectfully submits that the art of record does not disclose or suggest the subject matter as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the subject matter as set forth in the claims of the present application is patentable.

In view of all of the foregoing, reversal of all of the rejections set forth in the Final Office Action is therefore respectfully requested.

Respectfully submitted,

/Clifford A. Ulrich/

Dated: June 15, 2010

By: Clifford A. Ulrich, Reg. No. 42,194 for:
Gerard A. Messina, Reg. No. 35,952

KENYON & KENYON LLP
One Broadway
New York, New York 10004
(212) 425-7200
CUSTOMER NO. 26646

CLAIMS APPENDIX

8. A fuel injector comprising;

a valve needle;

an armature forming an axially movable valve part together with the valve needle;

a restoring spring acting upon the armature;

a magnetic coil cooperating with the armature;

a valve-seat body;

a valve-closure member, which forms a sealing seat with the valve-seat body, being provided on the valve needle; and

a valve sleeve surrounding the armature and the valve needle along the entire length of the armature and the entire length of the valve needle, a wall thickness of the valve sleeve varying across its axial extension;

wherein the wall thickness of the valve sleeve decreases in a discharge direction of the fuel in order to limit noise emissions;

wherein an outer diameter and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar which also separates the inflow-side region having greater material strength from the discharge-side region having lower material strength;

wherein the radial cross section and the wall thickness of the inflow-side region are constant from the collar to a location axially beyond the valve needle in a direction opposite the discharge direction of the fuel;

wherein the decreased radial cross section and the decreased wall thickness of the discharge-side region are constant from the collar to a discharge-side end of the valve sleeve, the discharge-side end of the valve sleeve disposed axially beyond the valve-closure member; and

wherein the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle in both the discharge direction of the fuel and the direction opposite the discharge direction of the fuel.

10. The fuel injector according to claim 8, wherein the wall thickness of the valve sleeve is about 0.5 mm in an inflow-side region.

14. The fuel injector according to claim 10, wherein the wall thickness of the valve sleeve is about 0.3 mm in a discharge-side region.

15. A fuel injector comprising;

a valve needle;

an armature, the armature and the valve needle together forming an axially movable valve part;

a restoring spring acting upon the armature;

a magnetic coil cooperating with the armature;

a valve-seat body;

a valve-closure member disposed on the valve needle, the valve-closure member forming a sealing seat with the valve-seat body; and

a valve sleeve surrounding the armature and the valve needle along the entire length of the armature and the entire length of the valve needle,

wherein

an outer diameter, a wall thickness and a radial cross section of the valve sleeve decrease between an inflow-side region and a discharge-side region on a collar, the collar separating the inflow-side region from the discharge-side region,

an intake pipe is inserted into the valve sleeve in the inflow-side region, the intake pipe extending axially beyond the valve sleeve in an intake-side direction to span an axial distance between the valve sleeve and a seal disposed in a region of central fuel supply,

the radial cross section and the wall thickness of the inflow-side region are constant from the collar to a location axially beyond the valve needle in the intake-side direction,

the decreased radial cross section and the decreased wall thickness of the discharge-side region are constant from the collar to a discharge-side end of the valve sleeve, the discharge-side end of the valve sleeve disposed axially beyond the valve-closure member, and

the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially beyond the valve needle in both the intake-side direction and a direction opposite the intake-side direction.

16. The fuel injector of claim 15, further comprising:

a filter element pressed into the valve sleeve.

17. The fuel injector of claim 16, further comprising an electrical plug contact, the filter element being disposed axially between the electrical plug contact and the discharge-side region of the valve sleeve.

18. The fuel injector of claim 16, wherein the intake pipe radially contacts the seal.

19. The fuel injector of claim 8, wherein the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region.

20. The fuel injector of claim 8, wherein the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve.

21. The fuel injector of claim 15, wherein the collar spans an axial distance that is less than an axial distance spanned by the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region.

22. The fuel injector of claim 15, wherein the constant decreased radial cross section and the constant decreased wall thickness of the discharge-side region extend axially along a majority of an overall axial length of the valve sleeve.

EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§1.130, 1.131, or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellant in the appeal.

RELATED PROCEEDINGS APPENDIX

As indicated above in Section 2 of this Appeal Brief, "[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellant or the assignee, ROBERT BOSCH GMBH, 'which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.'" As such, there are no "decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]" to be submitted.